

CLAIMS

[0081]

1. A method for producing a thermoplastic resin composition
5 containing ultrafine particles, the method comprising mixing
a metal-containing organic compound with a thermoplastic
resin; and then heating the resulting mixture at a
temperature of at least the decomposition starting
temperature and lower than the complete decomposition
10 temperature of the metal-containing organic compound to
produce a composition containing ultrafine metal particles
and/or ultrafine metal oxide particles having a number-
average particle size of 0.1 to 80 nm dispersed in the
thermoplastic resin.

15 [0082]

2. The method for producing the thermoplastic resin
composition containing ultrafine particles according to
claim 1, wherein the ultrafine metal particles and/or the
ultrafine metal oxide particles having a number-average
20 particle size of 0.1 to 80 nm dispersed in the thermoplastic
resin is composed of a metal component or a metal oxide
component, and an organic component is bonded to the surface
of the particle.

[0083]

25 3. The method for producing the thermoplastic resin

composition containing ultrafine particles according to claim 1 or 2, wherein the ultrafine particles having a number-average particle size of 0.1 to 80 nm dispersed in the thermoplastic resin are synthesized in the thermoplastic resin.

[0084]

4. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 3, wherein the heating temperature is not lower than the decomposition starting temperature of the metal-containing organic compound, lower than the complete decomposition temperature of the metal-containing organic compound, and higher than the melting point of the thermoplastic resin.

[0085]

5. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 4, wherein the metal component is at least one element selected from Cu, Ag, Au, Zn, Cd, Ga, In, Si, Ge, Ti, Sn, Pd, Fe, Co, Ni, Ru, Rh, Os, Ir, Pt, V, Cr, Mn, Y, Zr, Nb, Mo, Ca, Sr, Ba, Sb, and Bi.

[0086]

6. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 5, further comprising exposing the

resulting melted thermoplastic resin composition to a reduced pressure equal to or lower than atmospheric pressure after the metal-containing organic compound is heated at a temperature of not lower than the decomposition starting
5 temperature of the metal-containing organic compound, lower than the complete decomposition temperature of the metal-containing organic compound, and higher than the melting point of the thermoplastic resin.

[0087]

- 10 7. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 6, the method further comprising kneading the melted thermoplastic resin and the metal-containing organic compound to disperse ultrafine metal particles
15 and/or ultrafine metal oxide particles in the thermoplastic resin, wherein the central portion of the particle is composed of a metal component or a metal oxide component, an organic component is bonded to the surface of the particle, and the particles dispersed have a number-average particle
20 size of 1 to 60 nm.